

Search Plan and Results

Question

[What is the relationship between the intake of milk and milk products and body weight? \(DGAC 2010\)](#)

Date Searched

7/29/09

Inclusion Criteria

- June 2004 to July 2009
- Human subjects
- English language
- International
- *Sample size:* Minimum of 10 subjects per study arm; preference for larger sizes, if available
- *Dropout rate:* Less than 20%; preference for smaller dropout rates
- *Ages:* Adults 19 years and older (Energy Balance section addresses body weight measures for children)
- *Populations:* Healthy and those with elevated chronic disease risk.

Exclusion Criteria

- Studies that only consider cancer outcomes
- Studies that considered milk and milk products as part of a larger dietary pattern
- Medical treatment/therapy
- Diseased subjects (already diagnosed with disease related to study purpose)
- Hospitalized patients
- Animal studies
- In vitro studies
- Articles not peer reviewed (websites, magazine articles, Federal reports, etc.).

Search Terms: Search Vocabulary

("Dairy Products"[mh]) AND ("Body Weights and Measures"[Mesh] OR "Body Mass Index"[Mesh] OR "Adiposity"[mh] OR "Overweight"[mh] OR "Obesity"[mh] OR "Weight Gain"[mh] OR "body composition"[mh] OR "energy intake"[mh] OR caloric intake*) for adults

Electronic Databases

Total hits from all electronic database searches: 140

Total articles identified to review from electronic databases: 42

Articles Identified Via Handsearch or Other Means

Summary of Articles Identified to Review

Number of Primary Articles Identified: 17

Number of Review Articles Identified: 1

Total Number of Articles Identified: 18

Number of Articles Reviewed but Excluded: 24

List of Articles Included for Evidence Analysis

SYSTEMATIC REVIEW

Lanou AJ, Barnard ND. [Dairy and weight loss hypothesis: An evaluation of the clinical trials.](#) *Nutr Rev.* 2008 May; 66 (5): 272-279. Review. PMID: 18454813.

PRIMARY RESEARCH

Randomized Controlled Trial

Bowen J, Noakes M, Clifton PM. [Effect of calcium and dairy foods in high protein, energy-restricted diets on weight loss and metabolic parameters in overweight adults.](#) *Int J Obes (Lond).* 2005 Aug; 29 (8): 957-965. PMID: 15711601.

Prospective Cohort Studies

Rajpathak SN, Rimm EB, Rosner B, Willett WC, Hu FB. [Calcium and dairy intakes in relation to long-term weight gain in US men.](#) *Am J Clin Nutr.* 2006 Mar; 83 (3): 559-566. PMID: 16522901.

Rosell M, Håkansson NN, Wolk A. [Association between dairy food consumption and weight change over nine years in 19, 352 perimenopausal women.](#) *Am J Clin Nutr.* 2006 Dec; 84 (6): 1, 481-1, 488. PMID: 17158433.

Snijder MB, van Dam RM, Stehouwer CD, Hiddink GJ, Heine RJ, Dekker JM. [A prospective study of dairy consumption in relation to changes in metabolic risk factors: The Hoorn Study](#). *Obesity* (Silver Spring). 2008 Mar; 16 (3): 706-709. Epub 2008 Jan 17. PMID: 18239556.

Vergnaud AC, Péneau S, Chat-Yung S, Kesse E, Czernichow S, Galan P, Hercberg S, Bertrais S. [Dairy consumption and six-year changes in body weight and waist circumference in middle-aged French adults](#). *Am J Clin Nutr*. 2008 Nov; 88 (5): 1, 248-1, 255. PMID: 18996859.

Cross-Sectional Studies

Azadbakht L, Mirmiran P, Esmaillzadeh A, Azizi F. [Dairy consumption is inversely associated with the prevalence of the metabolic syndrome in Iranian adults](#). *Am J Clin Nutr*. 2005 Sep; 82 (3): 523-530. PMID: 16155263.

Beydoun MA, Gary TL, Caballero BH, Lawrence RS, Cheskin LJ, Wang Y. [Ethnic differences in dairy and related nutrient consumption among US adults and their association with obesity, central obesity and the metabolic syndrome](#). *Am J Clin Nutr*. 2008 Jun; 87 (6): 1, 914-1, 925. PMID: 18541585; Central PMCID: PMC2585752.

Brooks BM, Rajeshwari R, Nicklas TA, Yang SJ, Berenson GS. [Association of calcium intake, dairy product consumption with overweight status in young adults \(1995-1996\): The Bogalusa Heart Study](#). *J Am Coll Nutr*. 2006 Dec; 25 (6): 523-532. PMID: 17229900.

Houston DK, Driver KE, Bush AJ, Kritchevsky SB. [The association between cheese consumption and cardiovascular risk factors among adults](#). *J Hum Nutr Diet*. 2008 Apr; 21 (2): 129-140. PMID: 18339053.

Marques-Vidal P, Gonçalves A, Dias CM. [Milk intake is inversely related to obesity in men and in young women: Data from the Portuguese Health Interview Survey 1998-1999](#). *Int J Obes (Lond)*. 2006 Jan; 30 (1): 88-93. PMID: 16116492.

Mirmiran P, Esmaillzadeh A, Azizi F. [Dairy consumption and body mass index: An inverse relationship](#). *Int J Obes (Lond)*. 2005 Jan; 29 (1): 115-121. PMID: 15534616.

Murakami K, Okubo H, Sasaki S. [No relation between intakes of calcium and dairy products and body mass index in Japanese women aged 18 to 20 years](#). *Nutrition*. 2006 May; 22 (5): 490-495. Epub 2006 Feb 24. PMID: 16500081.

O'Neil CE, Nicklas TA, Liu Y, Franklin FA. [Impact of dairy and sweetened beverage consumption on diet and weight of a multiethnic population of Head Start mothers](#). *J Am Diet Assoc*. 2009 May; 109 (5): 874-882. PMID: 19394474.

Energy Intake as Outcome

Dove ER, Hodgson JM, Puddey IB, Beilin LJ, Lee YP, Mori TA. [Skim milk compared with a fruit drink acutely reduces appetite and energy intake in overweight men and women](#). *Am J Clin Nutr*. 2009 Jul; 90 (1): 70-75. Epub 2009 May 27. PMID: 19474132.

Harper A, James A, Flint A, Astrup A. [Increased satiety after intake of a chocolate milk drink compared with a carbonated beverage, but no difference in subsequent ad libitum lunch intake](#). *Br J Nutr*. 2007 Mar; 97 (3): 579-583. PMID: 17313721.

Hollis JH, Mattes RD. [Effect of increased dairy consumption on appetitive ratings and food](#)

[intake](#). *Obesity* (Silver Spring). 2007 Jun; 15 (6): 1, 520-1, 526. Erratum in: *Obesity* (Silver Spring). 2007 Oct; 15 (10): 2, 520. PMID: 17557989.

Pregnancy

Olsen SF, Halldorsson TI, Willett WC, Knudsen VK, Gillman MW, Mikkelsen TB, Olsen J; NUTRIX Consortium. [Milk consumption during pregnancy is associated with increased infant size at birth: Prospective cohort study](#). *Am J Clin Nutr*. 2007 Oct; 86 (4): 1, 104-1, 110. PMID: 17921389.

List of Excluded Articles with Reason

Article	Reason for Exclusion
Al-Zahrani MS. Increased intake of dairy products is related to lower periodontitis prevalence . <i>J Periodontol</i> . 2006 Feb; 77 (2): 289-294. PMID: 16460256.	Does not include body weight as an outcome.
Biong AS, Rebnord HM, Fimreite RL, Trygg KU, Ringstad J, Thelle DS, Pedersen JI. Intake of dairy fat and dairy products and risk of myocardial infarction: A case-control study . <i>Int J Food Sci Nutr</i> . 2008 Mar; 59 (2): 155-165. PMID: 17886080.	Does not include body weight in analyses.
Biong AS, Müller H, Seljeflot I, Veierød MB, Pedersen JI. A comparison of the effects of cheese and butter on serum lipids, haemostatic variables and homocysteine . <i>Br J Nutr</i> . 2004 Nov; 92 (5): 791-797. PMID: 15533268.	Does not include body weight in analyses.
Choi HK, Atkinson K, Karlson EW, Willett W, Curhan G. Purine-rich foods, dairy and protein intake and the risk of gout in men . <i>N Engl J Med</i> . 2004 Mar 11; 350 (11): 1, 093-1, 103. PMID: 15014182.	Does not answer question: Does not examine relationship between milk product intake and body weight.
Eagan MS, Lyle RM, Gunther CW, Peacock M, Teegarden D. Effect of one-year dairy product intervention on fat mass in young women: six-month follow-up . <i>Obesity</i> (Silver Spring). 2006 Dec; 14 (12): 2, 242-2, 248. PMID: 17189552.	Included in Lanou, 2008.
Elwood PC, Pickering JE, Fehily AM. Milk and dairy consumption, diabetes and the metabolic syndrome: The Caerphilly prospective study . <i>J Epidemiol Community Health</i> . 2007 Aug; 61 (8): 695-698. PMID: 17630368.	Does not answer question: Does not examine relationship between milk product intake and body weight.
Engberink MF, Geleijnse JM, de Jong N, Smit HA, Kok FJ, Verschuren WM. Dairy intake, blood pressure, and incident hypertension in a general Dutch population . <i>J Nutr</i> . 2009 Mar; 139 (3): 582-587. Epub 2009 Jan 21. PMID: 19158223.	Does not answer question: Does not examine relationship between milk product intake and body weight.

<p>Gunther CW, Legowski PA, Lyle RM, McCabe GP, Eagan MS, Peacock M, Teegarden D. <u>Dairy products do not lead to alterations in body weight or fat mass in young women in a one-year intervention.</u> <i>Am J Clin Nutr.</i> 2005 Apr; 81 (4): 751-756. PMID: 15817848. (Hand search)</p>	<p>Included in Lanou, 2008.</p>
<p>Harvey-Berino J, Gold BC, Lauber R, Starinski A. <u>The impact of calcium and dairy product consumption on weight loss.</u> <i>Obes Res.</i> 2005 Oct; 13 (10): 1, 720-1, 726. PMID: 16286519.</p>	<p>Included in Lanou, 2008.</p>
<p>Larsson SC, Bergkvist L, Wolk A. <u>Milk and lactose intakes and ovarian cancer risk in the Swedish Mammography Cohort.</u> <i>Am J Clin Nutr.</i> 2004 Nov; 80 (5): 1, 353-1, 357. PMID: 15531686.</p>	<p>Does not answer question: Does not examine relationship between milk product intake and body weight.</p>
<p>Liu S, Choi HK, Ford E, Song Y, Klevak A, Buring JE, Manson JE. <u>A prospective study of dairy intake and the risk of type 2 diabetes in women.</u> <i>Diabetes Care.</i> 2006 Jul; 29 (7): 1, 579-1, 584. PMID: 16801582.</p>	<p>Does not answer question: Does not examine relationship between milk product intake and body weight.</p>
<p>McGlynn KA, Sakoda LC, Rubertone MV, Sesterhenn IA, Lyu C, Graubard BI, Erickson RL. <u>Body size, dairy consumption, puberty and risk of testicular germ cell tumors.</u> <i>Am J Epidemiol.</i> 2007 Feb 15; 165 (4): 355-363. Epub 2006 Nov 16. PMID: 17110638.</p>	<p>Does not answer question: Does not examine relationship between milk product intake and body weight.</p>
<p>Peters ES, Luckett BG, Applebaum KM, Marsit CJ, McClean MD, Kelsey KT. <u>Dairy products, leanness, and head and neck squamous cell carcinoma.</u> <i>Head Neck.</i> 2008 Sep; 30 (9): 1, 193-1, 205. PMID: 18642285; PMCID: PMC2683246.</p>	<p>Does not answer question: does not examine relationship between milk product intake and body weight.</p>
<p>Ranganathan R, Nicklas TA, Yang SJ, Berenson GS. <u>The nutritional impact of dairy product consumption on dietary intakes of adults (1995-1996): The Bogalusa Heart Study.</u> <i>J Am Diet Assoc.</i> 2005 Sep; 105 (9): 1, 391-1, 400. PMID: 16129080.</p>	<p>Does not include body weight in analyses.</p>
<p>Rosado JL, Díaz M, González K, Griffin I, Abrams SA, Preciado R. <u>The addition of milk or yogurt to a plant-based diet increases zinc bioavailability but does not affect iron bioavailability in women.</u> <i>J Nutr.</i> 2005 Mar; 135 (3): 465-468. PMID: 15735079.</p>	<p>Does not include body weight in analyses.</p>
<p>Shahar DR, Abel R, Elhayany A, Vardi H, Fraser D. <u>Does dairy calcium intake enhance weight loss among overweight diabetic patients?</u> <i>Diabetes Care.</i> 2007 Mar; 30 (3): 485-489. PMID: 17327309.</p>	<p>Participants diagnosed with type 2 diabetes.</p>

<p>Snijder MB, van der Heijden AA, van Dam RM, Stehouwer CD, Hiddink GJ, Nijpels G, Heine RJ, Bouter LM, Dekker JM. Is higher dairy consumption associated with lower body weight and fewer metabolic disturbances? The Hoorn Study. <i>Am J Clin Nutr.</i> 2007 Apr; 85 (4): 989-995. PMID: 17413097.</p>	<p>Results reported based on the same dataset as Snijder, 2008.</p>
<p>Thompson WG, Rostad Holdman N, Janzow DJ, Slezak JM, Morris KL, Zemel MB. Effect of energy-reduced diets high in dairy products and fiber on weight loss in obese adults. <i>Obes Res.</i> 2005 Aug; 13 (8): 1, 344-1, 353. PMID: 16129716. (Hand search)</p>	<p>Included in Lanou, 2008.</p>
<p>Weyermann M, Brenner H, Rothenbacher D. Adipokines in human milk and risk of overweight in early childhood: A prospective cohort study. <i>Epidemiology.</i> 2007 Nov; 18 (6): 722-729. PMID: 18062063.</p>	<p>Evaluates break milk, not milk or milk products as defined by the Committee.</p>
<p>White KM, Bauer SJ, Hartz KK, Baldridge M. Changes in body composition with yogurt consumption during resistance training in women. <i>Int J Sport Nutr Exerc Metab.</i> 2009 Feb; 19 (1): 18-33. PMID: 19403951.</p>	<p>Does not answer question: Includes yogurt as part of resistance training intervention.</p>
<p>Wilkinson SB, Tarnopolsky MA, Macdonald MJ, Macdonald JR, Armstrong D, Phillips SM. Consumption of fluid skim milk promotes greater muscle protein accretion after resistance exercise than does consumption of an isonitrogenous and isoenergetic soy-protein beverage. <i>Am J Clin Nutr.</i> 2007 Apr; 85 (4): 1, 031-1, 040. PMID: 17413102.</p>	<p>Does not include body weight in analyses.</p>
<p>Woo J, Lau W, Xu L, Lam CW, Zhao X, Yu W, Xing X, Lau E, Kuhn-Sherlock B, Pocock N, Eastell R. Milk supplementation and bone health in young adult Chinese women. <i>J Womens Health (Larchmt).</i> 2007 Jun; 16 (5): 692-702. PMID: 17627404.</p>	<p>Evaluates milk supplement, not milk or milk products as defined by the Committee.</p>
<p>Wyatt HR, Jortberg BT, Babbel C, Garner S, Dong F, Grunwald GK, Hill JO. Weight loss in a community initiative that promotes decreased energy intake and increased physical activity and dairy consumption: Calcium Weighs-In. <i>J Phys Act Health.</i> 2008 Jan; 5 (1): 28-44. PMID: 18209252.</p>	<p>Dropout rate higher than inclusion criteria.</p>
<p>Zemel MB, Richards J, Milstead A, Campbell P. Effects of calcium and dairy on body composition and weight loss in African-American adults. <i>Obes Res.</i> 2005 Jul; 13 (7): 1, 218-1, 225. PMID: 16076991.</p>	<p>Included in Lanou, 2008.</p>

